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| APPLICATION NO.                 | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------|-------------|----------------------|---------------------|------------------|
| 10/717,621                      | 11/21/2003  | Hye-Yeon Kim         | 030681-591          | 8611             |
| 21839                           | 7590        | 01/11/2008           | EXAMINER            |                  |
| BUCHANAN, INGERSOLL & ROONEY PC |             |                      | BLOOM, NATHAN J     |                  |
| POST OFFICE BOX 1404            |             |                      | ART UNIT            | PAPER NUMBER     |
| ALEXANDRIA, VA 22313-1404       |             |                      | 2624                |                  |
| NOTIFICATION DATE               |             | DELIVERY MODE        |                     |                  |
| 01/11/2008                      |             | ELECTRONIC           |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com  
debra.hawkins@bipc.com

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/717,621             | KIM ET AL.          |
| <b>Examiner</b>              | <b>Art Unit</b>        |                     |
| Nathan Bloom                 | 2624                   |                     |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 25 October 2007.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-11,25-46,60-71 and 73-75 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-6,9-11,25,26,28-30,32-41,44-46,60-63,66-71 and 73-75 is/are rejected.
- 7) Claim(s) 5,7,8,27,31,42,43,64 and 65 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ .  | 6) <input type="checkbox"/> Other: _____ .                        |

## **DETAILED ACTION**

Applicants' response to the last Office Action, filed on October 25<sup>th</sup>, 2007 has been entered and made of record.

### ***Claim Objections***

1. Claim 5 is objected to because of the following informalities: The amendment to instant claim 5 makes it unclear as to what pixel values are being differenced and compared within one another. The use of the term values, differences, adjacent, and diagonal are all relative terms and in conjunction with one another do not clearly specify a particular set of pixels or difference values. Examiner will interpret this claim as the comparison of a vertical and two diagonal differences. If the difference value corresponding to the smallest value is in the diagonal (slant) direction then this will be the interpolation direction. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 5 recites the limitation "the upper pixel" in lines 4 and 8-10. There is insufficient antecedent basis for this limitation in the claim. This language may appear in other claims.

Please make appropriate correction.

***Response to Amendment***

4. The 35 USC 112 2nd paragraph and 35 USC 101 rejection of claims 7-8, 71, and 73-75 have been withdrawn in view of the corrections made to these claims in the current amendment.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 3-6, 25-26, 29-30, 36, 38-41, and 60-63 are rejected under 35 U.S.C. 102(e) as being anticipated by Greggain (US 6219464).

Instant claims 1, 3-4, 6, 25-26, 29-30, 36, 38-41, 60-63: The prior rejection of these claims is maintained in view of the response to the arguments below.

Instant claim 5: The apparatus of claim 1, wherein the slant line possibility determination unit determines that the edge included in the input pixel may have a slant-line shape when differences between values of two pixels, arranged at one side of the upper pixel, and values of their diagonally corresponding pixels are smaller than the difference (a) between the upper and lower pixels and are also smaller than differences between values of two pixels, arranged at the other side of the upper pixel, and values of their diagonally corresponding pixels. [Column 6 lines 25-40 (see Figures 7A and 7B for the flowchart), wherein either of the two pixels in the top row can be considered the upper pixel. If at least one of the oblique (slant) direction differences is below

*the threshold (threshold is the difference in the vertical direction) the interpolation is performed in the oblique direction. As can be seen in figures 1-3 the pixels are arranged at either side and differences are of the diagonally corresponding pixels. Furthermore, as taught in column 6 lines 35-37 the smallest difference value of the oblique (slant) directions will indicate the direction of the interpolation.]*

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 71 and 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain.

Instant claims 71 and 73-74: The prior rejection of these claims is maintained in view of the response to the arguments below.

9. Claims 10, 33, 45, 68 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain as applied to claims 1 and 6-7 above, and further in view of Ma (US 6836572) and Westerman (US 6262773).

Instant claims 10, 33, 45, 68, 75: The prior rejection of these claims is maintained in view of the response to the arguments below.

10. Claims 2, 11, 37, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain as applied to claim 1 above, and further in view of Takeda (US 5894329).  
Instant claims 2, 11, 37, and 46: The prior rejection of these claims is maintained in view of the response to the arguments below.

11. Claims 34-35 and 69-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain in view of Ma and Westerman as applied to claim 10 above and Greggain and Takeda as applied to claims 2 and 11 above, and further in view of Ma and Takeda.

Instant claims 34-35 and 69-70: The prior rejection of these claims is maintained in view of the response to the arguments below.

12. Claims 9, 28, 32, 44, and 66-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain as applied to claim 1 above, and further in view of Yoo (US 2003/0112369).  
Instant claim 9, 28, 32, 44, and 66-67: The prior rejection of these claims is maintained in view of the response to the arguments below..

***Response to Amendment***

13. Applicant's arguments filed on October 25<sup>th</sup>, 2007 with regards to the topics listed immediately below have been fully considered but they are not persuasive. See the discussion below for details.

Applicants' argue that claim 1 recites that an input pixel is operated on and that this limitation is not taught by Greggain:

As per figure 3B and paragraphs 0043-0055 of the Applicants' disclosure the input pixel is the pixel to be interpolated and thus does not have a value associated with it as can be seen in figure 3B the input pixel X resides in the row of pixels to be interpolated. This appears to be an incorrect use of the word input and should instead be referred to as the target pixel. In the case of the example listed in paragraphs 0043-0055 the even fields contain pixel values and are being differenced in order to determine the existence direction of an edge. The target or input pixels value is then obtained through interpolation in the determined direction. Thus Greggain does teach the limitation since the input pixel is the pixel to be interpolated. This applies accordingly with the argument of claims 25, 36, 60, 71, and 73-74.

Applicants' argue that Takeda in view of Greggain does not teach the limitation of claim 2: Examiner maintains the prior interpretation that an original pixel value is a previous pixel value, and that it is not specified in the claim language that the position/field/scan-line of the original pixel value is that of the current input pixel value.

Applicants' argue that Greggain and Ma in view of Westerman do not teach the limitations of claim 10:

The limitations in question are as follows: "thresholding difference between the absolute value of opposite pixels", "when the edge included in the input pixel value is determined to belong to the

vertical area, and", "when the edge included in the input pixel is determined to belong to the slant line area"

The 1<sup>st</sup> limitation referred to above is not in the claim and thus is not applicable to the discussion of the patentability of this claim with respect to the references. The 2nd and 3rd limitations are taught by Greggain the rejection of instant claim 1. Furthermore, Greggain also teaches the interpolation of the pixel based on these criteria. Ma and Westerman are relied upon for teaching the use of more than 2 sets of pixels. Also, as is evidenced by Greggain in figures 16-22 and the

14. Applicant's arguments and amendments, see the amended claims 8, 31 43, and 65 and Applicant's corresponding argument, filed on October, 25<sup>th</sup>, 2007, with respect to the subject matter of claims 8,31,43, and 65 and the teachings of Greggain in view of Ma have been fully considered and are persuasive. The 35 USC 103(a) of claims 8, 31, 43, and 65 has been withdrawn.

***Allowable Subject Matter***

15. Claims 7-8, 27, 31, 42-43, and 64-65 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter: Claims 7-8, 27, 31, 42-43, and 64-65 contain the limitation that the thresholding is performed on

specific differences of specific pixel difference values which are not disclosed by the known prior art.

***Conclusion***

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

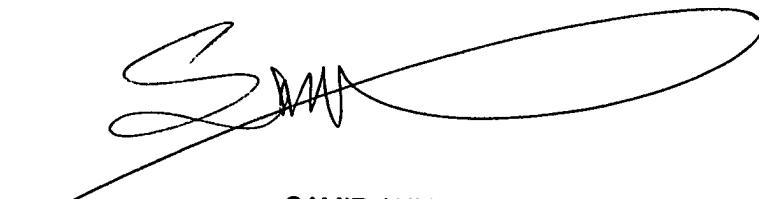
***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Bloom whose telephone number is 571-272-9321. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed, can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NB



SAMIR AHMED  
SUPERVISORY PATENT EXAMINER